

What is claimed is:

1        1. A method of sending feedback information in a fast automatic  
2 repeat request for frequency division duplex or time division duplex  
3 communication that form an overall wireless communication system having  
4 uplink traffic and downlink traffic transmitted in a plurality of slots forming a  
5 frame, comprising the steps of:

6 receiving packets at a receiver, where the received packets are  
7 then de-interleaved, de-ratematched, decoded and monitored for  
8 error detection; and

9 acknowledging the received packets by transmitting feedback  
10 data to the sender of the packets, said acknowledgement  
11 comprising the reservation of a plurality of slots in the uplink or  
12 downlink dedicated physical channel radio frame for the  
13 feedback data.

1        2. A method according to claim 1, where there are N slots per  
2 frame and wherein the feedback data is transmitted in slots  $N_1$  to  $N_2-1$  and the  
3 data in the uplink or downlink direction are transmitted in slots 1 to  $N_1-1$  and  
4 in slots  $N_2$  to N, where  $N_1 > 1$  and  $N_2 > N_1 + 1$ . 

1        3. A method according to claim 2, wherein the value of  $N_1$  is based  
2 upon the time offset between uplink and downlink channels as well as based  
3 upon the time required for de-interleaving, de-ratematching, decoding and  
4 cyclical redundancy checking.

1        4. A method according to claim 3, wherein the number of slots  
2 reserved for feedback data, ( $N_{fb} = N_2 - N_1$ ) is a function of the size of the  
3 feedback packet.

1           5. A method according to claim 1, wherein the value of  $N_1$  is based  
2 upon the time offset between uplink and downlink channels as well as based  
3 upon the time required for de-interleaving, de-ratematching, decoding and  
4 cyclical redundancy checking.

1           6. A method according to claim 5, wherein the number of slots  
2 reserved for feedback data, ( $N_{fb} = N_2 - N_1$ ) is a function of the size of the  
3 feedback packet.

1           7. A method according to claim 1, wherein the plurality of slots in  
2 the uplink or downlink dedicated physical channel radio frame for the feedback  
3 data is used for the feedback data only. 

1           8. A method of sending feedback information in a fast automatic  
2 repeat request for frequency division duplex or time division duplex  
3 communication that form an overall wireless communication system having  
4 uplink traffic and downlink traffic, transmitted in a plurality of slots forming a  
5 frame, comprising the steps of:

6           receiving packets at a receiver, where the received packets are  
7 then de-interleaved, de-ratematched, decoded and monitored for  
8 error detection; and

9           using less than all of the dedicated physical control channel  
10 (DPCCH) bits in at least some of the slots for transmitting the  
11 feedback data to the sender.

1           9. A method according to claim 8, wherein if more than a few  
2 feedback bits are required, than the spreading factor (SF) of the DPCCH is  
3 reduced, thereby creating more bits per time slot for use at least in part as  
4 feedback bits.

1           10. A method according to claim 8, wherein the feedback data to be  
2 transmitted to the sender is punctured into bits of the pilot, feedback (FBI) or  
3 transmit power control (TPC) fields in at least one time slot.

1           11. A method according to claim 8, wherein the feedback data to be  
2 transmitted to the sender is punctured into bits of the transport format  
3 combination indicator (TFCI) field if the number of transport format  
4 combinations needed during the connection leaves part or whole of the TFCI  
5 field unused.

1           12. A method of sending feedback information in a fast automatic  
2 repeat request for frequency division duplex or time division duplex  
3 communication that form an overall wireless communication system having  
4 uplink traffic and downlink traffic transmitted in a plurality of slots forming a  
5 frame, comprising the steps of:

6           receiving packets at a receiver, where the received packets are  
7 then de-interleaved, de-ratematched, decoded and monitored for  
8 error detection; and

9           acknowledging the received packets by transmitting feedback  
10 data in a feedback channel to the sender of the packets, wherein  
11 the feedback channel is generated in the same manner as a  
12 channel is generated for compressed mode.

1           13. A method according to claim 12, wherein the feedback channel  
2 is generated by puncturing into fields.

1           14. A method according to claim 13, wherein the fields are control  
2 fields.

1           15. A method according to claim 14, wherein the fields are control  
2           fields and/or data fields.

1           16. A method according to claim 13, wherein the feedback data can  
2           be delayed and therefore presented in a later frame.

1           17. A method according to claim 12, wherein the feedback channel  
2           can be generated by higher layer scheduling.